SEQUENCE LISTING

<110>   RENARD, MICHEL

         DELOURME, REGINE

         BARRET, PIERRE

         BRUNEL, DOMINIQUE

         FROGER, NICOLE

         TANGUY, XAVIER

<120>   MUTANT GENE OF THE GRAS FAMILY AND PLANTS WITH REDUCED DEVELOPMENT
CONTAINING SAID MUTANT GENE

<130>   218874US0PCT

<140>   10/030,194

<141>   2002-02-04

<150>   PCT/FR00/02216

<151>   2000-08-02

<150>   FR 9910023

<151>   1999-08-02

<160>   6

<170>   PatentIn version 3.1

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<212> DNA

<213> Brassica napus

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<222> (60)..(1778)

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Met Lys Arg Asp Leu His Gln Phe Gln Gly Pro Asn His Gly Thr Ser
1               5                   10                  15

atc gcc ggt tct tcc act tct tcc cct gcg gtg ttt ggt aaa gac aag        155
Ile Ala Gly Ser Ser Thr Ser Ser Pro Ala Val Phe Gly Lys Asp Lys
                20                  25                  30

atg atg atg gtc aaa gaa gaa gaa gac gac gag ctt cta gga gtc ttg        203
Met Met Met Val Lys Glu Glu Glu Asp Asp Glu Leu Leu Gly Val Leu
            35                  40                  45

ggt tac aag gtt agg tct tcg gag atg gct gag gtt gcg ttg aaa ctc        251
Gly Tyr Lys Val Arg Ser Ser Glu Met Ala Glu Val Ala Leu Lys Leu
        50                  55                  60

gag cag ctt gag acg atg atg ggt aac gct caa gaa gac ggt tta gct        299
Glu Gln Leu Glu Thr Met Met Gly Asn Ala Gln Glu Asp Gly Leu Ala
65                  70                  75                  80

cac ctc gcg acg gat act gtt cat tac aac ccc gct gag ctt tac tcg        347
His Leu Ala Thr Asp Thr Val His Tyr Asn Pro Ala Glu Leu Tyr Ser
                85                  90                  95

tgg ctt gat aac atg ctc acg gag ctt aac cca ccc gct gca acg acc        395
Trp Leu Asp Asn Met Leu Thr Glu Leu Asn Pro Pro Ala Ala Thr Thr
                100                 105                 110

gga tct aac gct ttg aac ccg gag att aat aat aat aat aat aac tcg        443
Gly Ser Asn Ala Leu Asn Pro Glu Ile Asn Asn Asn Asn Asn Asn Ser
            115                 120                 125
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-2-

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ttt ttc acc gga ggc gac ctc aaa gcg att cct gga aac gcg gtt tgt      491
Phe Phe Thr Gly Gly Asp Leu Lys Ala Ile Pro Gly Asn Ala Val Cys
    130                 135                 140

cgc aga tct aat cag ttc gcg ttt gcg gtt gat tcg tcg agt aat aag      539
Arg Arg Ser Asn Gln Phe Ala Phe Ala Val Asp Ser Ser Ser Asn Lys
145                 150                 155                 160

cgt ttg aaa ccg tcc tcg agc cct gat tcg atg gtt aca tct cca tca      587
Arg Leu Lys Pro Ser Ser Ser Pro Asp Ser Met Val Thr Ser Pro Ser
                165                 170                 175

cct gct gga gtt ata gga acg acg gtt aca acc gtg acc gag tca act      635
Pro Ala Gly Val Ile Gly Thr Thr Val Thr Thr Val Thr Glu Ser Thr
                180                 185                 190

cgt cct tta atc ctg gtc gac tcg cag gac aac gga gtg cgt cta gtc      683
Arg Pro Leu Ile Leu Val Asp Ser Gln Asp Asn Gly Val Arg Leu Val
                195                 200                 205

cac gcg ctt atg gcc tgc gct gaa gcc gtg cag agc agc aac ttg act      731
His Ala Leu Met Ala Cys Ala Glu Ala Val Gln Ser Ser Asn Leu Thr
    210                 215                 220

cta gcg gag gct ctc gtt aag cag att ggt ttc ttg gcc gtc tct caa      779
Leu Ala Glu Ala Leu Val Lys Gln Ile Gly Phe Leu Ala Val Ser Gln
225                 230                 235                 240

gcc gga gcc atg agg aaa gtc gcc acg tac ttc gcc gaa gct ctc gcg      827
Ala Gly Ala Met Arg Lys Val Ala Thr Tyr Phe Ala Glu Ala Leu Ala
                245                 250                 255

cgg agg atc tac cgc ctc tct ccg ccg cag acg cag atc gat cac tct      875
Arg Arg Ile Tyr Arg Leu Ser Pro Pro Gln Thr Gln Ile Asp His Ser
                260                 265                 270

tta tcc gat act ctc cag atg cac ttc tac gag act tgc cct tac ctc      923
Leu Ser Asp Thr Leu Gln Met His Phe Tyr Glu Thr Cys Pro Tyr Leu
            275                 280                 285

aag ttc gct cac ttc acg gcg aat cag gcg att ctc gag gct ttc gaa      971
Lys Phe Ala His Phe Thr Ala Asn Gln Ala Ile Leu Glu Ala Phe Glu
    290                 295                 300

ggg aag aag aga gtc cac gtc atc gat ttc tcg atg aac caa ggg ctt     1019
Gly Lys Lys Arg Val His Val Ile Asp Phe Ser Met Asn Gln Gly Leu
305                 310                 315                 320

cag tgg ccc gcg ctt atg caa gcc ctt gcg ttg agg gaa gga ggt cct     1067
Gln Trp Pro Ala Leu Met Gln Ala Leu Ala Leu Arg Glu Gly Gly Pro
                325                 330                 335
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ccg agt ttc agg tta acc gga att ggt cct ccc gcg gcg gat aac tcc     1115
Pro Ser Phe Arg Leu Thr Gly Ile Gly Pro Pro Ala Ala Asp Asn Ser
            340                 345                 350

gat cat ctc cat gaa gtt gga tgt aag ttg gct cag ctc gcg gag gcg     1163
Asp His Leu His Glu Val Gly Cys Lys Leu Ala Gln Leu Ala Glu Ala
            355                 360                 365

att cac gtc gag ttt gag tat cgt ggc ttt gtt gct aat agc tta gct     1211
Ile His Val Glu Phe Glu Tyr Arg Gly Phe Val Ala Asn Ser Leu Ala
    370                 375                 380

gat ctt gat gcc tcg atg ctt gag ctt aga ccg agt gaa acc gaa gct     1259
Asp Leu Asp Ala Ser Met Leu Glu Leu Arg Pro Ser Glu Thr Glu Ala
385                 390                 395                 400

gtg gcg gtt aac tct gtt ttc gag ctc cac aag ctc cta ggc cgt acc     1307
Val Ala Val Asn Ser Val Phe Glu Leu His Lys Leu Leu Gly Arg Thr
                405                 410                 415

ggt ggg ata gag aaa gtc ttc ggc gtt gtg aaa cag att aaa ccg gtg     1355
Gly Gly Ile Glu Lys Val Phe Gly Val Val Lys Gln Ile Lys Pro Val
            420                 425                 430

att ttc acg gtt gtt gag caa gaa tcg aat cat aac ggt ccg gtt ttc     1403
Ile Phe Thr Val Val Glu Gln Glu Ser Asn His Asn Gly Pro Val Phe
            435                 440                 445

tta gac cgg ttt act gaa tcg ctg cat tat tat tcg acg ttg ttt gat     1451
Leu Asp Arg Phe Thr Glu Ser Leu His Tyr Tyr Ser Thr Leu Phe Asp
            450                 455                 460

tcc ttg gaa ggt gct ccg agt agc caa gat aaa gtt atg tcg gaa gtt     1499
Ser Leu Glu Gly Ala Pro Ser Ser Gln Asp Lys Val Met Ser Glu Val
465                 470                 475                 480

tat tta ggg aaa cag att tgc aat ctg gtg gct tgc gaa ggt ccg gac     1547
Tyr Leu Gly Lys Gln Ile Cys Asn Leu Val Ala Cys Glu Gly Pro Asp
                485                 490                 495

cgt gtt gag aga cat gag acg ctg agt caa tgg tcg aac cgg ttc ggt     1595
Arg Val Glu Arg His Glu Thr Leu Ser Gln Trp Ser Asn Arg Phe Gly
            500                 505                 510

tcg tcc ggt ttt gcg ccg gcg cat ctc ggg tct aac gcg ttt aag caa     1643
Ser Ser Gly Phe Ala Pro Ala His Leu Gly Ser Asn Ala Phe Lys Gln
            515                 520                 525

gcg agt acg ctt ttg gct ttg ttt aat gga ggc gaa ggt tat cgt gtg     1691
Ala Ser Thr Leu Leu Ala Leu Phe Asn Gly Gly Glu Gly Tyr Arg Val
            530                 535                 540
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gag gag aat aat ggg tgt ttg atg ttg agt tgg cac act cga ccg ctc    1739
Glu Glu Asn Asn Gly Cys Leu Met Leu Ser Trp His Thr Arg Pro Leu
545             550             555             560

ata acc acc tcc gct tgg aag ctc tcg gcg gtg cac tga g            1779
Ile Thr Thr Ser Ala Trp Lys Leu Ser Ala Val His
            565             570
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<213> Brassica napus

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Ile Ala Gly Ser Ser Thr Ser Ser Pro Ala Val Phe Gly Lys Asp Lys
            20              25              30


Met Met Met Val Lys Glu Glu Glu Asp Asp Glu Leu Leu Gly Val Leu
        35              40              45


Gly Tyr Lys Val Arg Ser Ser Glu Met Ala Glu Val Ala Leu Lys Leu
    50              55              60


Glu Gln Leu Glu Thr Met Met Gly Asn Ala Gln Glu Asp Gly Leu Ala
65              70              75              80


His Leu Ala Thr Asp Thr Val His Tyr Asn Pro Ala Glu Leu Tyr Ser
            85              90              95


Trp Leu Asp Asn Met Leu Thr Glu Leu Asn Pro Pro Ala Ala Thr Thr
            100             105             110


Gly Ser Asn Ala Leu Asn Pro Glu Ile Asn Asn Asn Asn Asn Asn Ser
        115             120             125
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Phe Phe Thr Gly Gly Asp Leu Lys Ala Ile Pro Gly Asn Ala Val Cys
    130             135             140

Arg Arg Ser Asn Gln Phe Ala Phe Ala Val Asp Ser Ser Ser Asn Lys
145             150             155             160

Arg Leu Lys Pro Ser Ser Ser Pro Asp Ser Met Val Thr Ser Pro Ser
            165             170             175

Pro Ala Gly Val Ile Gly Thr Thr Val Thr Thr Val Thr Glu Ser Thr
            180             185             190

Arg Pro Leu Ile Leu Val Asp Ser Gln Asp Asn Gly Val Arg Leu Val
        195             200             205

His Ala Leu Met Ala Cys Ala Glu Ala Val Gln Ser Ser Asn Leu Thr
    210             215             220

Leu Ala Glu Ala Leu Val Lys Gln Ile Gly Phe Leu Ala Val Ser Gln
225             230             235             240

Ala Gly Ala Met Arg Lys Val Ala Thr Tyr Phe Ala Glu Ala Leu Ala
            245             250             255

Arg Arg Ile Tyr Arg Leu Ser Pro Pro Gln Thr Gln Ile Asp His Ser
            260             265             270

Leu Ser Asp Thr Leu Gln Met His Phe Tyr Glu Thr Cys Pro Tyr Leu
        275             280             285

Lys Phe Ala His Phe Thr Ala Asn Gln Ala Ile Leu Glu Ala Phe Glu
    290             295             300

Gly Lys Lys Arg Val His Val Ile Asp Phe Ser Met Asn Gln Gly Leu
305             310             315             320

Gln Trp Pro Ala Leu Met Gln Ala Leu Ala Leu Arg Glu Gly Gly Pro
            325             330             335
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Pro Ser Phe Arg Leu Thr Gly Ile Gly Pro Pro Ala Ala Asp Asn Ser
        340   345   350

Asp His Leu His Glu Val Gly Cys Lys Leu Ala Gln Leu Ala Glu Ala
        355   360   365

Ile His Val Glu Phe Glu Tyr Arg Gly Phe Val Ala Asn Ser Leu Ala
    370   375.   380

Asp Leu Asp Ala Ser Met Leu Glu Leu Arg Pro Ser Glu Thr Glu Ala
385   390   395   400

Val Ala Val Asn Ser Val Phe Glu Leu His Lys Leu Leu Gly Arg Thr
            405   410   415

Gly Gly Ile Glu Lys Val Phe Gly Val Val Lys Gln Ile Lys Pro Val
        420   425   430

Ile Phe Thr Val Val Glu Gln Glu Ser Asn His Asn Gly Pro Val Phe
    435   440   445

Leu Asp Arg Phe Thr Glu Ser Leu His Tyr Tyr Ser Thr Leu Phe Asp
    450   455   460

Ser Leu Glu Gly Ala Pro Ser Ser Gln Asp Lys Val Met Ser Glu Val
465   470   475   480

Tyr Leu Gly Lys Gln Ile Cys Asn Leu Val Ala Cys Glu Gly Pro Asp
            485   490   495

Arg Val Glu Arg His Glu Thr Leu Ser Gln Trp Ser Asn Arg Phe Gly
        500   505   510

Ser Ser Gly Phe Ala Pro Ala His Leu Gly Ser Asn Ala Phe Lys Gln
        515   520   525

Ala Ser Thr Leu Leu Ala Leu Phe Asn Gly Gly Glu Gly Tyr Arg Val
        530   535   540

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Glu Glu Asn Asn Gly Cys Leu Met Leu Ser Trp His Thr Arg Pro Leu
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Ile Thr Thr Ser Ala Trp Lys Leu Ser Ala Val His
                565                 570


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<213>   Brassica napus


<220>

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<222>   (60)..(1778)

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atg aag agg gat ctt cat cag ttc caa ggt ccc aac cac ggg aca tca          107
Met Lys Arg Asp Leu His Gln Phe Gln Gly Pro Asn His Gly Thr Ser
1               5                   10                  15

atc gcc ggt tct tcc act tct tcc cct gcg gtg ttt ggt aaa gac aag          155
Ile Ala Gly Ser Ser Thr Ser Ser Pro Ala Val Phe Gly Lys Asp Lys
                20                  25                  30

atg atg atg gtc aaa gaa gaa gaa gac gac gag ctt cta gga gtc ttg          203
Met Met Met Val Lys Glu Glu Glu Asp Asp Glu Leu Leu Gly Val Leu
        35                  40                  45

ggt tac aag gtt agg tct tcg gag atg gct gag gtt gcg ttg aaa ctc          251
Gly Tyr Lys Val Arg Ser Ser Glu Met Ala Glu Val Ala Leu Lys Leu
    50                  55                  60

gag cag ctt gag acg atg atg ggt aac gct caa gaa gac ggt tta gct          299
Glu Gln Leu Glu Thr Met Met Gly Asn Ala Gln Glu Asp Gly Leu Ala
65                  70                  75                  80

cac ctc gcg acg gat act gtt cat tac aac ccc gct gag ctt tac tcg          347
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His Leu Ala Thr Asp Thr Val His Tyr Asn Pro Ala Glu Leu Tyr Ser
                85              90                  95

tgg ctt gat aac atg ctc acg gag ctt aac cca ccc gct gca acg acc        395
Trp Leu Asp Asn Met Leu Thr Glu Leu Asn Pro Pro Ala Ala Thr Thr
            100             105                 110

gga tct aac gct ttg aac ccg gag att aat aat aat aat aat aac tcg        443
Gly Ser Asn Ala Leu Asn Pro Glu Ile Asn Asn Asn Asn Asn Asn Ser
            115             120                 125

ttt ttc acc gga ggc gac ctc aaa gcg att cct gga aac gcg gtt tgt        491
Phe Phe Thr Gly Gly Asp Leu Lys Ala Ile Pro Gly Asn Ala Val Cys
        130             135                 140

cgc aga tct aat cag ttc gcg ttt gcg gtt gat tcg tcg agt aat aag        539
Arg Arg Ser Asn Gln Phe Ala Phe Ala Val Asp Ser Ser Ser Asn Lys
145             150                 155                 160

cgt ttg aaa ccg tcc tcg agc cct gat tcg atg gtt aca tct cca tca        587
Arg Leu Lys Pro Ser Ser Ser Pro Asp Ser Met Val Thr Ser Pro Ser
            165                 170                 175

cct gct gga gtt ata gga acg acg gtt aca acc gtg acc gag tca act        635
Pro Ala Gly Val Ile Gly Thr Thr Val Thr Thr Val Thr Glu Ser Thr
            180                 185                 190

cgt cct tta atc ctg gtc gac tcg cag gac aac gga gtg cgt cta gtc        683
Arg Pro Leu Ile Leu Val Asp Ser Gln Asp Asn Gly Val Arg Leu Val
            195                 200                 205

cac gcg ctt atg gcc tgc gct gaa gcc gtg cag agc agc aac ttg act        731
His Ala Leu Met Ala Cys Ala Glu Ala Val Gln Ser Ser Asn Leu Thr
    210                 215                 220

cta gcg gag gct ctc gtt aag cag att ggt ttc ttg gcc gtc tct caa        779
Leu Ala Glu Ala Leu Val Lys Gln Ile Gly Phe Leu Ala Val Ser Gln
225                 230                 235                 240

gcc gga gcc atg agg aaa gtc gcc acg tac ttc gcc gaa gct ctc gcg        827
Ala Gly Ala Met Arg Lys Val Ala Thr Tyr Phe Ala Glu Ala Leu Ala
                245                 250                 255

cgg agg atc tac cgc ctc tct ccg ccg cag acg cag atc gat cac tct        875
Arg Arg Ile Tyr Arg Leu Ser Pro Pro Gln Thr Gln Ile Asp His Ser
                260                 265                 270

tta tcc gat act ctc cag atg cac ttc tac gag act tgc cct tac ctc        923
Leu Ser Asp Thr Leu Gln Met His Phe Tyr Glu Thr Cys Pro Tyr Leu
        275                 280                 285

aag ttc gct cac ttc acg gcg aat cag gcg att ctc gag gct ttc gaa        971
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Lys Phe Ala His Phe Thr Ala Asn Gln Ala Ile Leu Glu Ala Phe Glu
290             295                 300

ggg aag aag aga gtc cac gtc atc gat ttc tcg atg aac caa ggg ctt      1019
Gly Lys Lys Arg Val His Val Ile Asp Phe Ser Met Asn Gln Gly Leu
305                 310                 315                 320

cag tgg ccc gcg ctt atg caa gcc ctt gcg ttg agg gaa gga ggt cct      1067
Gln Trp Pro Ala Leu Met Gln Ala Leu Ala Leu Arg Glu Gly Gly Pro
                325                 330                 335

ccg agt ttc agg tta acc gga att ggt cct ccc gcg gcg gat aac tcc      1115
Pro Ser Phe Arg Leu Thr Gly Ile Gly Pro Pro Ala Ala Asp Asn Ser
                340                 345                 350

gat cat ctc cat gaa gtt gga tgt aag ttg gct cag ctc gcg gag gcg      1163
Asp His Leu His Glu Val Gly Cys Lys Leu Ala Gln Leu Ala Glu Ala
            355                 360                 365

att cac gtc gag ttt gag tat cgt ggc ttt gtt gct aat agc tta gct      1211
Ile His Val Glu Phe Glu Tyr Arg Gly Phe Val Ala Asn Ser Leu Ala
            370                 375                 380

gat ctt gat gcc tcg atg ctt gag ctt aga ccg agt gaa acc gaa gct      1259
Asp Leu Asp Ala Ser Met Leu Glu Leu Arg Pro Ser Glu Thr Glu Ala
385                 390                 395                 400

gtg gcg gtt aac tct gtt ttc gag ctc cac aag ctc cta ggc cgt acc      1307
Val Ala Val Asn Ser Val Phe Glu Leu His Lys Leu Leu Gly Arg Thr
                405                 410                 415

ggt ggg ata gag aaa gtc ttc ggc gtt gtg aaa cag att aaa ccg gtg      1355
Gly Gly Ile Glu Lys Val Phe Gly Val Val Lys Gln Ile Lys Pro Val
                420                 425                 430

att ttc acg gtt gtt gag caa gaa tcg aat cat aac ggt ccg gtt ttc      1403
Ile Phe Thr Val Val Glu Gln Glu Ser Asn His Asn Gly Pro Val Phe
                435                 440                 445

tta gac cgg ttt act gaa tcg ctg cat tat tat tcg acg ttg ttt gat      1451
Leu Asp Arg Phe Thr Glu Ser Leu His Tyr Tyr Ser Thr Leu Phe Asp
            450                 455                 460

tcc ttg gaa ggt gct ccg agt agc caa gat aaa gtt atg tcg gaa gtt      1499
Ser Leu Glu Gly Ala Pro Ser Ser Gln Asp Lys Val Met Ser Glu Val
465                 470                 475                 480

tat tta ggg aaa cag att tgc aat ctg gtg gct tgc gaa ggt ccg gac      1547
Tyr Leu Gly Lys Gln Ile Cys Asn Leu Val Ala Cys Glu Gly Pro Asp
                485                 490                 495

cgt gtt gag aga cat gag acg ctg agt caa tgg tcg aac cgg ttc ggt      1595
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Arg Val Glu Arg His Glu Thr Leu Ser Gln Trp Ser Asn Arg Phe Gly
            500                 505                 510

tcg tcc ggt ttt gcg ccg gcg cat ctc ggg tct aac gcg ttt aag caa    1643
Ser Ser Gly Phe Ala Pro Ala His Leu Gly Ser Asn Ala Phe Lys Gln
            515                 520                 525

gcg agt acg ctt ttg gct ttg ttt aat gga ggc gaa ggt tat cgt gtg    1691
Ala Ser Thr Leu Leu Ala Leu Phe Asn Gly Gly Glu Gly Tyr Arg Val
            530                 535                 540

gag aag aat aat ggg tgt ttg atg ttg agt tgg cac act cga ccg ctc    1739
Glu Lys Asn Asn Gly Cys Leu Met Leu Ser Trp His Thr Arg Pro Leu
545                 550                 555                 560

ata acc acc tcc gct tgg aag ctc tcg gcg gtg cac tga g               1779
Ile Thr Thr Ser Ala Trp Lys Leu Ser Ala Val His
            565                 570
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<211> 572

<212> PRT

<213> Brassica napus

<400> 4

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Met Lys Arg Asp Leu His Gln Phe Gln Gly Pro Asn His Gly Thr Ser
1               5                   10                  15

Ile Ala Gly Ser Ser Thr Ser Ser Pro Ala Val Phe Gly Lys Asp Lys
            20                  25                  30

Met Met Met Val Lys Glu Glu Glu Asp Asp Glu Leu Leu Gly Val Leu
            35                  40                  45

Gly Tyr Lys Val Arg Ser Ser Glu Met Ala Glu Val Ala Leu Lys Leu
            50                  55                  60

Glu Gln Leu Glu Thr Met Met Gly Asn Ala Gln Glu Asp Gly Leu Ala
65                  70                  75                  80
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-11-

His Leu Ala Thr Asp Thr Val His Tyr Asn Pro Ala Glu Leu Tyr Ser
                85   90   95

Trp Leu Asp Asn Met Leu Thr Glu Leu Asn Pro Pro Ala Ala Thr Thr
                100   105   110

Gly Ser Asn Ala Leu Asn Pro Glu Ile Asn Asn Asn Asn Asn Asn Ser
                115   120   125

Phe Phe Thr Gly Gly Asp Leu Lys Ala Ile Pro Gly Asn Ala Val Cys
    130   135   140

Arg Arg Ser Asn Gln Phe Ala Phe Ala Val Asp Ser Ser Ser Asn Lys
145   150   155   160

Arg Leu Lys Pro Ser Ser Ser Pro Asp Ser Met Val Thr Ser Pro Ser
                165   170   175

Pro Ala Gly Val Ile Gly Thr Thr Val Thr Thr Val Thr Glu Ser Thr
                180   185   190

Arg Pro Leu Ile Leu Val Asp Ser Gln Asp Asn Gly Val Arg Leu Val
                195   200   205

His Ala Leu Met Ala Cys Ala Glu Ala Val Gln Ser Ser Asn Leu Thr
    210   215   220

Leu Ala Glu Ala Leu Val Lys Gln Ile Gly Phe Leu Ala Val Ser Gln
225   230   235   240

Ala Gly Ala Met Arg Lys Val Ala Thr Tyr Phe Ala Glu Ala Leu Ala
                245   250   255

Arg Arg Ile Tyr Arg Leu Ser Pro Pro Gln Thr Gln Ile Asp His Ser
                260   265   270

Leu Ser Asp Thr Leu Gln Met His Phe Tyr Glu Thr Cys Pro Tyr Leu
    275   280   285

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Lys Phe Ala His Phe Thr Ala Asn Gln Ala Ile Leu Glu Ala Phe Glu
290   295   300

Gly Lys Lys Arg Val His Val Ile Asp Phe Ser Met Asn Gln Gly Leu
305   310   315   320

Gln Trp Pro Ala Leu Met Gln Ala Leu Ala Leu Arg Glu Gly Gly Pro
                325   330   335

Pro Ser Phe Arg Leu Thr Gly Ile Gly Pro Pro Ala Ala Asp Asn Ser
                340   345   350

Asp His Leu His Glu Val Gly Cys Lys Leu Ala Gln Leu Ala Glu Ala
        355   360   365

Ile His Val Glu Phe Glu Tyr Arg Gly Phe Val Ala Asn Ser Leu Ala
        370   375   380

Asp Leu Asp Ala Ser Met Leu Glu Leu Arg Pro Ser Glu Thr Glu Ala
385   390   395   400

Val Ala Val Asn Ser Val Phe Glu Leu His Lys Leu Leu Gly Arg Thr
                405   410   415

Gly Gly Ile Glu Lys Val Phe Gly Val Val Lys Gln Ile Lys Pro Val
                420   425   430

Ile Phe Thr Val Val Glu Gln Glu Ser Asn His Asn Gly Pro Val Phe
        435   440   445

Leu Asp Arg Phe Thr Glu Ser Leu His Tyr Tyr Ser Thr Leu Phe Asp
        450   455   460

Ser Leu Glu Gly Ala Pro Ser Ser Gln Asp Lys Val Met Ser Glu Val
465   470   475   480

Tyr Leu Gly Lys Gln Ile Cys Asn Leu Val Ala Cys Glu Gly Pro Asp
                485   490   495

```
Arg Val Glu Arg His Glu Thr Leu Ser Gln Trp Ser Asn Arg Phe Gly
        500              505               510

Ser Ser Gly Phe Ala Pro Ala His Leu Gly Ser Asn Ala Phe Lys Gln
        515              520               525

Ala Ser Thr Leu Leu Ala Leu Phe Asn Gly Gly Glu Gly Tyr Arg Val
    530              535              540

Glu Lys Asn Asn Gly Cys Leu Met Leu Ser Trp His Thr Arg Pro Leu
545              550              555               560

Ile Thr Thr Ser Ala Trp Lys Leu Ser Ala Val His
            565              570
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<213> Artificial Sequence

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<223> Synthetic Peptide

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<223> Xaa = Arg or Asn

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<223> Xaa = Arg or Asn

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